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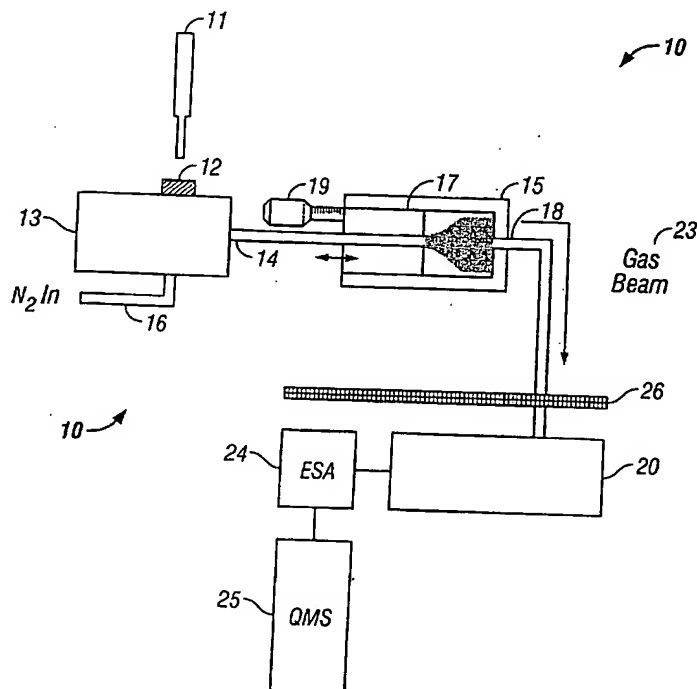
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(54) Title: **CHEMICAL SENSOR SYSTEM**



(57) Abstract: A chemical sensing apparatus and method for the detection of sub parts-per-trillion concentrations of molecules in a sample by optimizing electron utilization in the formation of negative ions is provided. A variety of media may be sampled including air, seawater, dray sediment, or undersea sediment. An electrostatic mirror is used to reduce the kinetic energy of an electron beam to zero or near-zero kinetic energy.

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